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|

by **TAP PING**  
ALBERTA'S WATER RESOURCES

— IRRIGATION —

*will provide . . .*

OPPORTUNITIES AND  
ECONOMIC SECURITY

*for*

THOUSANDS IN  
SOUTHERN ALBERTA

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# IRRIGATION--SOUTHERN ALBERTA

by  
R. A. McMULLEN



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SETTLEMENT OF THAT REGION in Southern Alberta known as the drought area has brought the farmers continued distress and hardship over a long period of years. This drought area is part of the famous "Palliser Triangle", which lies between the northern branch of the Saskatchewan River and the frontier of the United States, and between the Red River and the Rocky Mountains. During the years 1857 to 1860, Captain John Palliser was commissioned by the British Government to explore this area, to record its physical features and to determine the suitability of its soil for agriculture. Following his survey Captain John Palliser described this triangle as a dry area unsuited to agricultural settlement.

THUS, AS EARLY AS 1860, authoritative opinion condemned this dry area for extensive farming. Captain John Palliser no doubt observed differences in vegetation in isolated areas indicative of

[3]



*Desolation in Southern Alberta.*

IRRIGATION WILL PROVIDE RICH HARVESTS



differences in the probable average rainfall. But as a whole he considered the territory unsuited for extensive farming. Until 1908 this area was largely unsettled except for such ranching operations as could be carried on where water for stock purposes was available. But in the period of accelerated western development and railway expansion, during the boom years of 1908 to 1913, the scene changed and extensive settlement took place. Various agencies promoted settlement and land could be easily acquired. The Dominion Government gave encouragement to settlement by its homestead and pre-emption laws. The public accepted all of these agencies and conditions as a ready means to farm homes and prosperity, yet the deficiency in rainfall was evident from even casual observation of the natural growth on the land. This error in judgment was to some extent excusable on the part of the settlers, but inexcusable on the part of agencies

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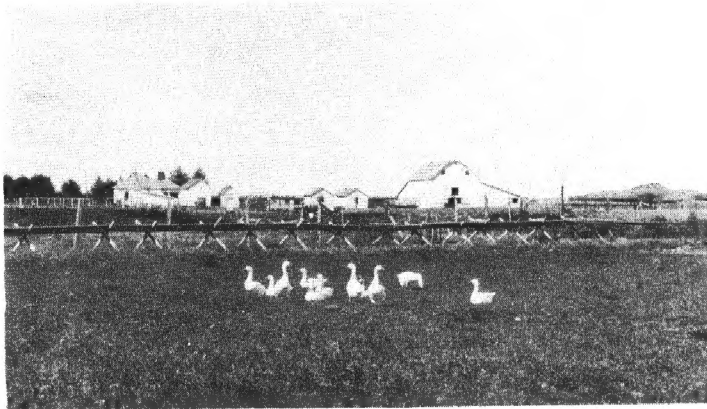


*Colonization Farm*



*Results of Irrigation Some Few Years Later.*





*Early Method of Irrigation in Southern Alberta.*



*Irrigating the Land Near Vauxhall.*

and Governments who failed at the time to take cognizance of known facts in their possession.

THE INEVITABLE TRAGEDY FOLLOWED, as subsequent events have so drastically proved. At least twenty crop failures have been experienced during the past thirty years. While it may be argued that a number of farmers have successfully developed modern mechanized methods of farming on a large scale in the semi-arid and sub normal regions, farmers on the whole have been given little more than a mere subsistence in drought areas. Government assistance has been given in the form of money, food and clothing. Well settled districts have become sparsely settled and wholesale abandonment of districts has resulted, the land reverting to the Government.

[5]

IRRIGATION WILL PROVIDE FERTILE FARM LANDS



*Irrigated Farm Near Brooks.*



*Sugar Beet Crop on Irrigation Farm Near Raymond.*

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TO-DAY, DOTTED OVER THIS LAND OF DESOLATION, isolated farmers continue the struggle against the almost insurmountable obstacles of drought, in the belief that "next year" will bring the hoped for rains, and consequent relief from poverty and distress. But the ever recurring dry years have at last convinced these disheartened farmers that their livelihood is at the mercy of the weather, that they cannot depend upon making a living from year to year under present conditions, and consequently they have come to look upon irrigation as the only solution to their difficulties.

THROUGHOUT THE WORLD similar conditions have been overcome by means of irrigation. In India and Egypt vast irrigation schemes have been developed by the British Government, and extensive areas of waste land have been





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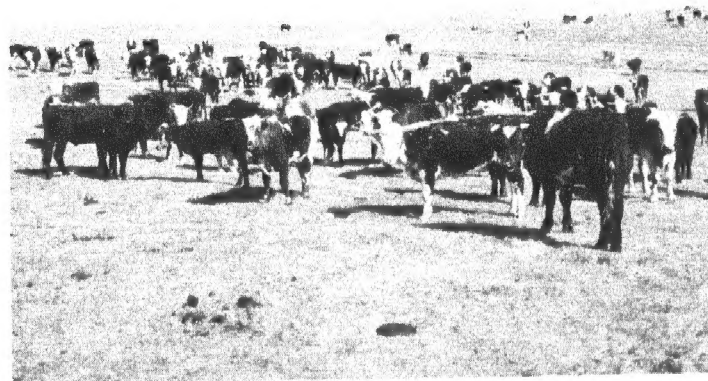
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reclaimed. On the North American continent, the Mormons first introduced irrigation in the Salt Lake Valley, Utah, and with marked success. Colorado and California followed, and from these points, irrigation spread throughout the arid areas of this continent.

THE EARLIEST RECORD OF IRRIGATION in Alberta, dates back to 1879 when a small ditch was built south of the present City of Calgary. For the next fifteen years small irrigation works were built by ranchers, mainly for the irrigation of hay meadows. With the passing of the Northwest Irrigation Act by Parliament in 1894, the benefits to be derived from irrigation in the Prairie Provinces were brought to the attention of the public throughout Canada. The passing of this Act marked the begin-

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*Poor Stock on Dry Land.*

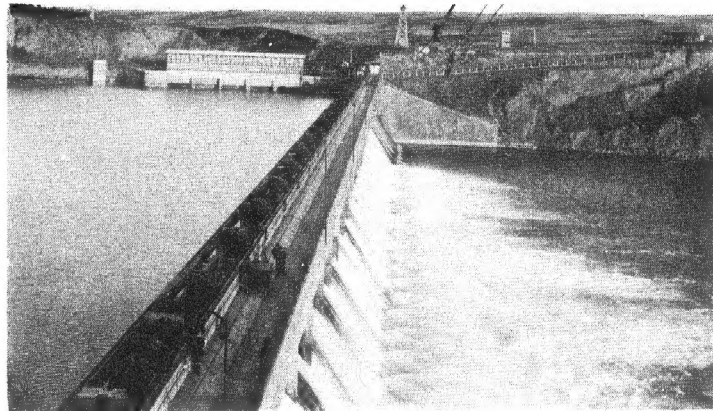


*Fat Stock on Irrigated Farm.*

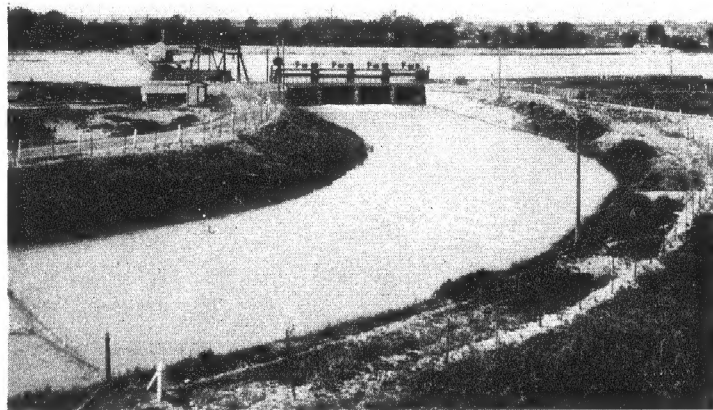
IRRIGATION WILL PROVIDE QUALITY FOOD

ning of a definite policy for the development of irrigation in Southern Alberta. During the past fifty years this development has progressed from small individual schemes, community enterprises, private and corporation projects, to the present development under the Irrigation Districts plan. The results obtained in these Irrigation Districts have clearly demonstrated that the soil and climatic conditions of Southern Alberta are deally suited for the production of live stock, the growing of forage crops, sugar beets, peas and other vegetables, registered seeds and fruits. Intensive mixed farming has replaced the growing of wheat in irrigated areas and agriculture has been stabilized in dry-land farm areas formerly subjected to devastating droughts. Communities of prosperous farmers now live in the enjoyment of

[8]

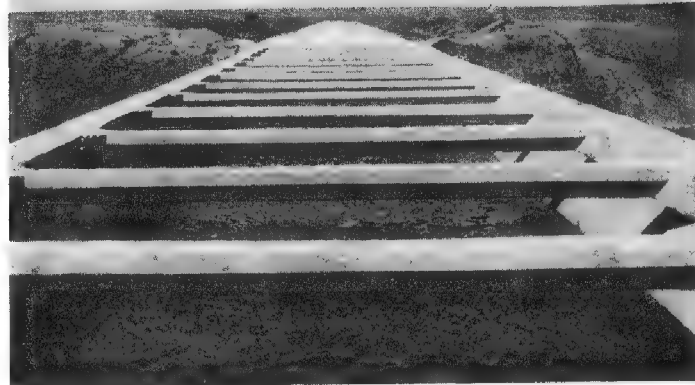


*Bassano Dam and Head Gates from West End.*



*Head Gates Western Irrigation Intake, Bow River.*





*Irrigation Aquaduct at Brooks.*



*Lathom Flume 15 ft. Semi-Circular Wood Stave, Half-Mile Long.*

greater social and educational advantages resulting from economic independence.

BUT THESE IRRIGATION OASES cover only a small part of this stretch of dry land which is potentially fertile. The projects now operating have proved conclusively that irrigation of the dry land in Southern Alberta is both practical and profitable. More food must be raised for the starving peoples of Europe. Employment and opportunities for permanent settlement must be created for many of the thousands of men who are being demobilized from the Armed Forces and for other thousands who are being thrown out of employment during the reconversion of our industries from war to peace time production. A comprehensive plan of irrigation develop-

[9]

IRRIGATION WILL PROVIDE ECONOMIC SECURITY



*Head Gates and Dam on Bow River Western Irrigation District.*



*East Branch Sluice Gates.*

ment will greatly assist in the solution of these problems.

THE ASSISTANCE OF THE DOMINION GOVERNMENT should, if at all possible, be secured by the Government of the Province of Alberta, so that a co-ordinated policy for the development of irrigation in Southern Alberta, may be adopted, not as a "Public Works" project, but as a reconstruction and rehabilitation programme. In the event that Dominion Government co-operation cannot be secured, alternative methods for the financing of contemplated irrigation development should be fully explored.

THE FOLLOWING SURVEY WILL INDICATE the total acreage presently under irrigation and the potential irrigable acreage in Southern Alberta.

(10)



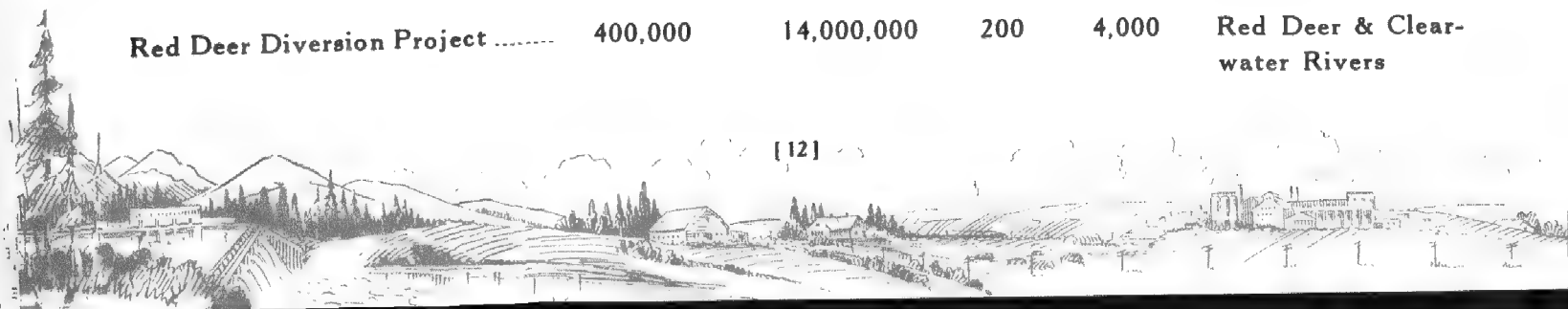
## EXISTING IRRIGATION PROJECTS

PROJECT	Acres Under Irrigation	Total Irrigable Acreage	Approx. No. of Farms	Source Of Water Supply
Eastern Irrigation District .....	167,000	280,000	1,750	Bow River
Lethbridge Northern Irrigation District ..	91,700	95,350	1,088	Old Man River
Canada Land and Irrigation Company ....	55,000	235,000	372	Bow River
United Irrigation District .....	34,300	34,300	315	Belly River
Raymond Irrigation District .....	15,130	15,130	200	St. Mary River
Western Irrigation District .....	40,000	150,000	900	Bow River
C.P.R. Lethbridge Section .....	75,725	75,725	1,061	St. Mary River
Magrath Irrigation District .....	7,000	7,000	115	St. Mary River
New West Irrigation District .....	4,500	4,500	45	Bow River
Taber Irrigation District .....	21,500	21,500	265	St. Mary River
Mountain View Irrigation District .....	3,600	3,600	42	Belly River
Leavitt Irrigation District .....	4,397	4,397	50	Belly River
Aetna Irrigation District .....	None	7,300	55	Belly River



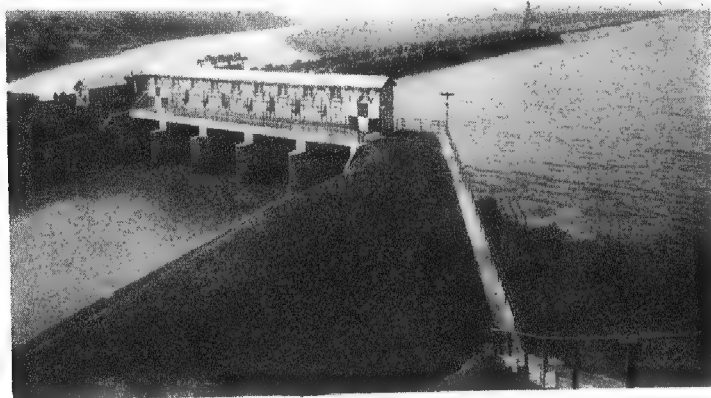
## ADDITIONAL AREA AVAILABLE FOR IRRIGATION

PROJECT	Total Acreage Irrigable	Approx. Cost	Approx. Number Permanent Employees	Number Potential Farms	Source of Water Supply
Extension and enlargement of A.R. & I. System .....	345,000	\$15,000,000	175	3,500	St. Mary, Water- ton & Belly Rivers
Extension of Canada Land & Irrigation Company .....	192,000	4,000,000	100	1,700	Bow River
Macleod Project .....	27,000	700,000	5	270	Old Man River & Willow Creek
Carmangay Project .....	12,000	360,000	2	120	Old Man River & Willow Creek
Red Deer Diversion Project .....	400,000	14,000,000	200	4,000	Red Deer & Clear- water Rivers





*Brooks Aqueduct -- 2 Miles of Continuous Concrete Conduit*



*Bassano Dam Showing Head Gates and Main Canal.*

THE ALBERTA POST-WAR Reconstruction Committee on Agriculture, basing its findings on a study of the reports pertaining to the conservation and development of water resources in the Province of Alberta, recommend the immediate development of the following projects as a post-war programme:—

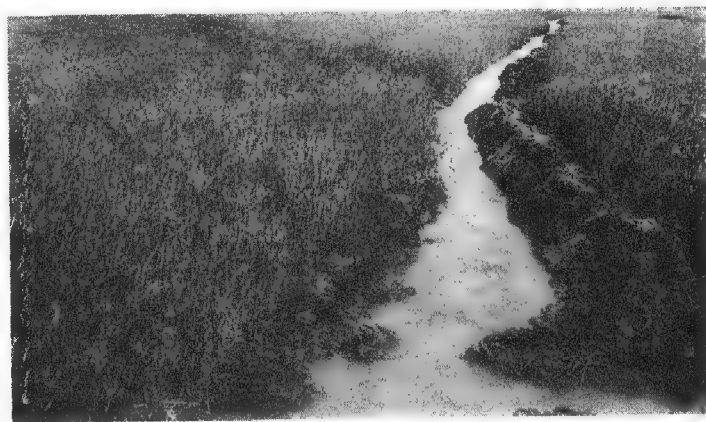
- (1) St. Mary and Milk Rivers Irrigation Development.
- (2) Extension of Canada Land and Irrigation Co.,
- (3) Aetna Irrigation Project.
- (4) Willow Creek, Granum, Lethbridge Northern, Carmangay Development.
- (5) Macleod Irrigation Project.
- (6) The Buffalo Lake-Red Deer River Irrigation and Power Development.

[13]

IRRIGATION WILL PROVIDE BETTER HOMES



*Irrigation Canal Near Strathmore.*



*Irrigated Wheat Farm Near Strathmore.*

(7) Storage Reservoirs:

- (a) The Gap Reservoir Site — Oldman River;
- (b) The Canyon Reservoir Site— Castle River;
- (c) The Gap Reservoir Site — Clearwater River.
- (d) The Gap Reservoir Site — North Saskatchewan River.

(8) River channel improvement.

IN 1945 ABOUT FIVE THOUSAND FARMERS irrigated approximately 519,852 acres in thirteen irrigation districts in the Province of Alberta. An additional 70,813 acres were irrigated by private interests. The extension of these Irrigation Districts and the development of new projects will bring a further 976,000 acres under irrigation and will provide an additional 9,590 irrigated farms.



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The St. Mary and Milk Rivers Water Development project and the extension of the Canada Land and Irrigation project are considered of vital importance as a Post-War Reconstruction Programme. While the former may be termed as a long range development programme, involving considerable capital expenditure, the extension of the latter would offer opportunities for early settlement at considerably less cost. The construction and development of these major projects would provide immediate employment for thousands of returning Veterans. Extracts from the Post-War Reconstruction Committee Report, dated March 10th, 1944, briefly summarize these two projects:—

1. ST. MARY AND MILK RIVERS.  
Both these rivers are international streams, and under agreement, if Canada

[15]

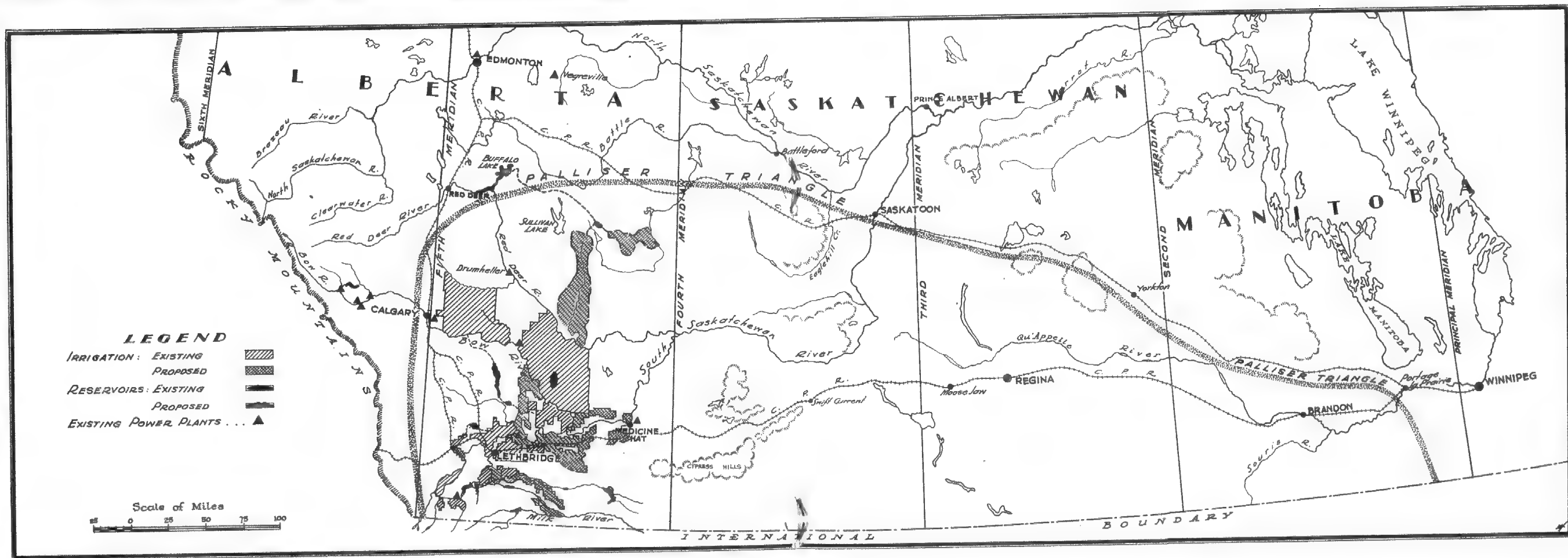


*Preparing for Irrigation Near Coaldale.*



*Irrigating the Land.*

**IRRIGATION WILL PROVIDE IMPROVED EDUCATIONAL FACILITIES**



THE ABOVE MAP SHOWS THE PALLISER TRIANGLE WITH EXISTING AND PROPOSED IRRIGATION WITHIN THE BOUNDARIES OF ALBERTA





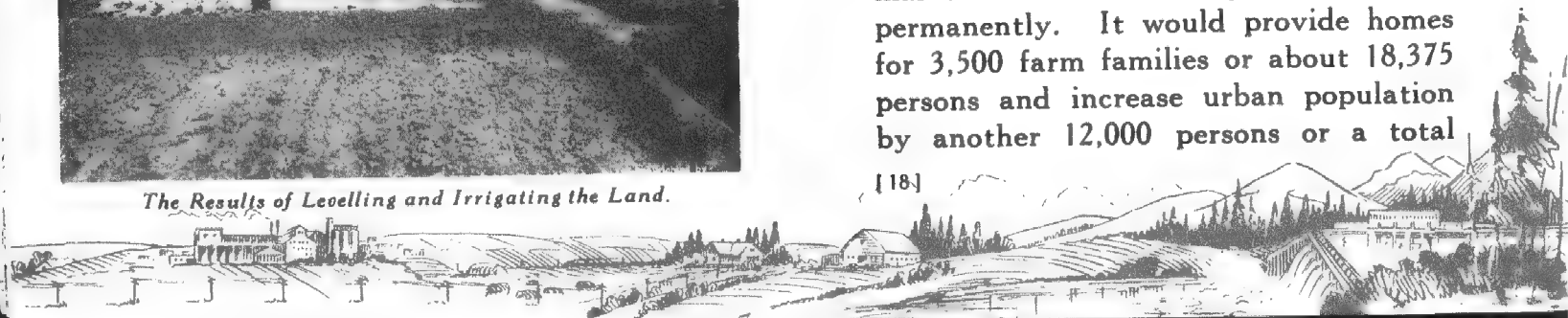
*Levelling the Land for Irrigation.*



*The Results of Levelling and Irrigating the Land.*

does not use its share of their water supply at an early date, the United States, which is already using its share, may apply for additional water, then, Canada may lose its portion for all time.

The project calls for construction of a reservoir with a capacity for 270,000 acre feet and smaller reservoirs and diversion of water from the Belly and Waterton Rivers to irrigate 345,000 acres of unirrigated and 120,000 acres of partly irrigated land. It is estimated that its construction would give employment to 600 men for ten years, or a greater number for a shorter period and its maintenance would require 175 men permanently. It would provide homes for 3,500 farm families or about 18,375 persons and increase urban population by another 12,000 persons or a total



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rural and urban population of about 30,000. The cost of construction of the main reservoirs, the smaller reservoirs, the connecting canals, the distribution system, the power plants, the preparation and colonization of the land is estimated at approximately \$15,000,000.

## 2. CANADA LAND AND IRRIGATION EXTENSION.

This project, presently serving about 42,000 acres in the vicinity of Vauxhall, can be extended to serve an additional 192,000 acres of land at an approximate cost, pending completion of surveys, of about \$4,000,000. It would employ about 500 men for three years.

Under irrigation, this land would accommodate about 1,700 more farm families and provide a maintenance employment

[ 19 ]



*Irrigated Garden Near Brooks.*



*Irrigated Sugar Beets and Wheat.*

IRRIGATION WILL PROVIDE INCREASED PROFITS TO FARMERS

for about 100 men, which would mean a rural population of about 8,500 and an urban population of about 6,000, making a total of about 14,500 persons living in one of the most fertile and desirable irrigable areas in Alberta.

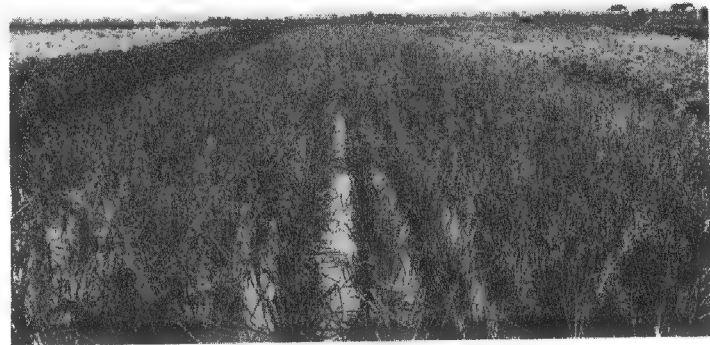
THE CONSTRUCTION of the many smaller, but equally important projects would contribute much to the ultimate success of irrigation throughout Southern Alberta.

THE NORTH SASKATCHEWAN project, originally proposed by the late William Pearce, one of the early surveyors in the West, although not an irrigation project in the true sense, but rather development which would benefit the live stock industry in the Provinces of Alberta and Saskatchewan, would pro-

[20]



*Corn on Irrigated Farm Near Vauxhall.*



*Onions Under Irrigation.*





*Tomatoes on Canada Land and Irrigation Company.*



*Melons on Irrigated Farm Near Brooks.*

vide water for an estimated area of approximately 486,000 acres in Alberta, and 925,000 acres in Saskatchewan. The development of this project would necessitate the construction of large dams and the creation of reservoirs at Buffalo Lake and at Sullivan Lake in Alberta and would materially assist in the generation of power for industrial development and rural electrification within the Province of Alberta. The ultimate cost of this project is estimated to be approximately \$31,000,000 for irrigation development and an additional \$10,000,000 for water power development.

IN ORDER TO DEMONSTRATE THE ECONOMIC EFFECT, which the development of irrigation in Southern Alberta would have upon the Province of Alberta and upon

[21]

IRRIGATION WILL PROVIDE GREATER OPPORTUNITIES



*Irrigated Farm Near Lethbridge.*



*Onion Crop on Irrigated Farm Near Taber.*

the Dominion as a whole, the following facts and figures are submitted:—

1. 976,000 additional acres would be made available for irrigation.
2. 9,590 irrigation farms would be created.
3. Assuming that each irrigation farm would support five members of a family, the rural population would be increased by about 47,950 persons.
4. The urban population would be increased by at least 39,000 persons.
5. Assuming that each irrigation farmer would spend an approximate amount of \$2,000 in the purchase of farm implements, it can be readily seen that the agricultural machine manufacturing industry would





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benefit to the amount of \$20,000,000 in orders for assorted implements.

6. In addition to the initial purchases of assorted farm implements, the need for sundry processed goods, fabrics, utensils, clothing and farm machinery replacements, etc., would approximate 20% of the total annual farm production, to the benefit of transportation and Eastern manufacturing concerns.

WHILE THE DEVELOPMENT of irrigation would greatly increase the volume of raw and processed products to be handled by railways and other transportation interests, it is worthy of note that the areas where such development is proposed, are already served by an excellent system of railroads and highways.

[ 23 ]



*First Year of Irrigation at Strathmore.*



*The Results of Irrigation Some Few Years Later at the Same Spot.*

IRRIGATION WILL PROVIDE RICH HARVESTS

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WHEREVER A STEADY SUPPLY of raw products is assured, industrial development has resulted. It may, therefore, be assumed that canning and dehydration plants, quick-freeze plants, meat and poultry processing plants, sugar beet factories, pickle factories, dairy processing plants will establish themselves throughout the irrigation districts in Southern Alberta.

THE SUGAR REFINERIES in the towns of Raymond and Picture Butte, the cradle of the sugar industry in Alberta, will amply demonstrate such development. In approximately one hundred days following September 27th, 1945, these refineries have produced in excess of 100,000,000 pounds of sugar. Next year about 45,000,000 pounds of sugar will be consumed in Alberta. The sugar



*Experimental Irrigation Farm Near Lethbridge.*



*Corn Crop on Irrigation Farm Near Vauxhall.*





*Farm Homes in Well Established Irrigated Districts.*

requirements for the Dominion during the year 1946 are estimated at approximately 900,000,000 pounds of sugar. Thus Alberta will have supplied 11% of Canada's sugar requirements. All the sugar consumed in the Dominion of Canada could be produced in Alberta through increased sugar beet production, the extension of existing sugar refineries and the construction of additional refineries as necessity demands.

THE RECOMMENDATIONS OF the Alberta Post-War Reconstruction Committee on Agriculture that an agreement be entered into between the Dominion and the Province of Alberta, outlining a fair and equitable division of costs and the respective spheres of activity of each Government should receive every consideration.

[25]

IRRIGATION WILL PROVIDE ABUNDANT CROPS



*A Modern Sheep Farm on Irrigated Land.*

IT IS A GENERALLY ACCEPTED PRINCIPLE that the total costs of irrigation development should not be charged to the lands immediately benefited as, in addition to the farmer, the transportation and commercial interests, the Municipalities, the Province and the Dominion derive great benefit from such development. Past experience having clearly shown that development costs generally exceed the amount which can be repaid by the production from the land, the equitable distribution of costs is essential to the successful development of new irrigation projects. A large portion of such costs should be absorbed by the Federal and Provincial Governments. Commensurate with the benefits indicated, the farmer, whose income will be limited during the early stages of development and who will be required to meet operational and maintenance charges, should be assessed



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his proportionate share of the costs of development. New projects developed should be to a large extent self-liquidating and eventually self-sustaining.

DURING THE DEPRESSION YEARS of 1929 to 1939, droughts and low prices for agricultural products resulted in many millions of dollars being spent by the Dominion and Provincial Governments on Relief and Relief Work Programmes. Additional sums of money were spent in supplying feed for stock and seed grains to needy farmers. According to the Public Accounts of the Province a brief summary of Relief expenditures in Alberta will amply demonstrate, that during the period of October 4th, 1930, to March 31st, 1939, Unemployment Relief, Agricultural Relief and Relief Work programme expenditures, far exceeded the total costs of the irrigation projects advocated for immediate development:—

[ 27 ]



*Modern Field Beet Loaders.*



*Loading Beet Pulp*

**IRRIGATION WILL PROVIDE IMPROVED TRANSPORTATION FACILITIES**

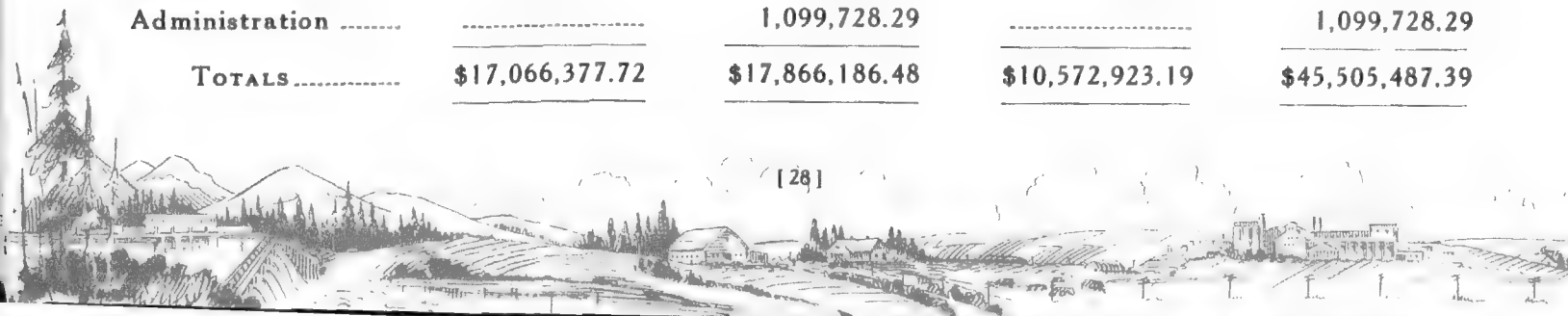


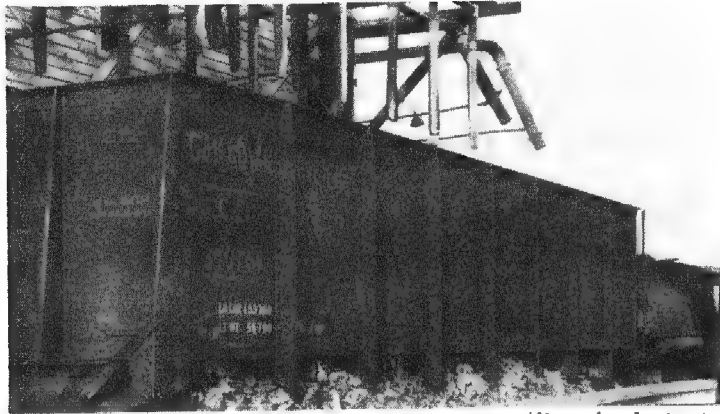


## UNEMPLOYMENT AND AGRICULTURAL RELIEF

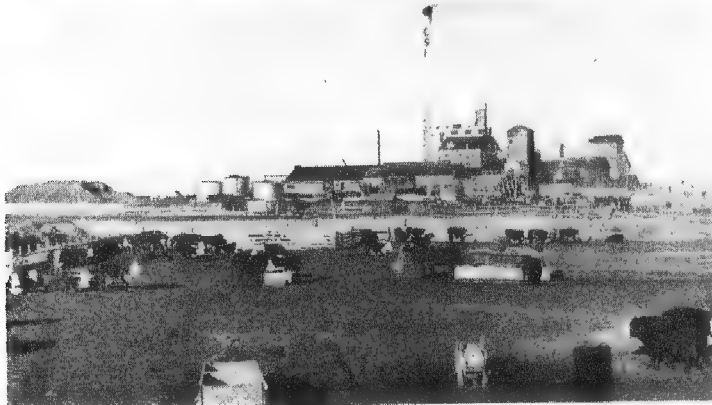
October 4th, 1930 to March 31st, 1939

	Dominion	Provincial	Municipal	Totals
Direct Relief .....	\$12,159,100.56	\$9,384,334.37	\$9,054,257.17	\$30,597,692.10
Relief Works .....	4,685,112.39	7,072,438.73	1,518,339.79	13,275,890.91
Miscellaneous .....	222,164.77	309,685.09	326.23	532,176.09
Administration .....	-----	1,099,728.29	-----	1,099,728.29
<b>TOTALS .....</b>	<b>\$17,066,377.72</b>	<b>\$17,866,186.48</b>	<b>\$10,572,923.19</b>	<b>\$45,505,487.39</b>





*Unloading Sugar Beets at Raymond from Alberta's Irrigated Lands.*



*Cattle Feeding on Beet Pulp at Picture Butte.*

SUBSEQUENT TO 1939, billions of dollars were spent in the prosecution of war. Complete victory having been achieved, our returning veterans must be given the opportunity to re-establish themselves in communities where the very principles they fought for—freedom from want, an adequate standard of living, improved social and educational facilities and economic security—may be obtained.

FOR ALMOST NINE YEARS an average of over five million dollars per annum was spent by the Dominion and Provincial Governments on Relief. If a similar amount were spent annually on irrigation development, thousands of acres of potentially fertile land could be made to produce abundant crops which cannot be grown elsewhere in the Province. Thus, the dreaded Relief problem of

[29]

**IRRIGATION WILL PROVIDE IMPROVED TRANSPORTATION FACILITIES**



*Packing Vegetables from Alberta's Irrigated Farms.*



*Labelling and Packing Vegetables from Alberta's Irrigated Farms.*

former years would be greatly reduced and improved economic conditions would result throughout the Province and the Nation.

THE ESTABLISHMENT OF a clearly defined colonization and re-establishment policy is of paramount importance to the ultimate success of irrigation in the Province of Alberta. Provisions must be made for the re-establishment of veterans under existing Federal and Provincial legislation. Provision must also be made for the transfer of the dry-land farmers from semi-arid and sub-normal regions to suitable irrigation districts where they may have ample opportunity to adjust themselves to irrigation farming. Many of these potential irrigation farmers, unfamiliar with modern irrigation methods, would enjoy a greater measure of success under the



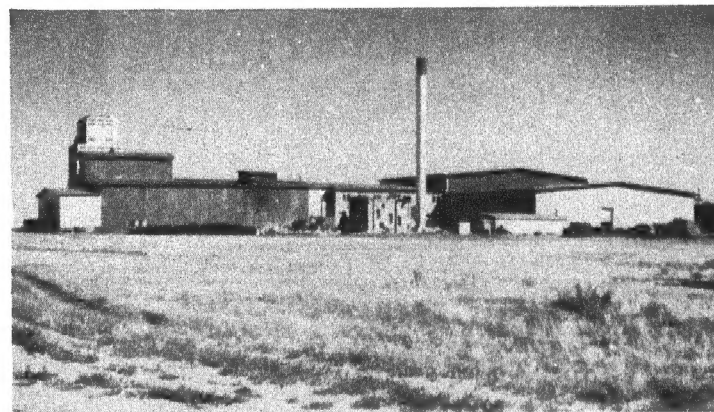
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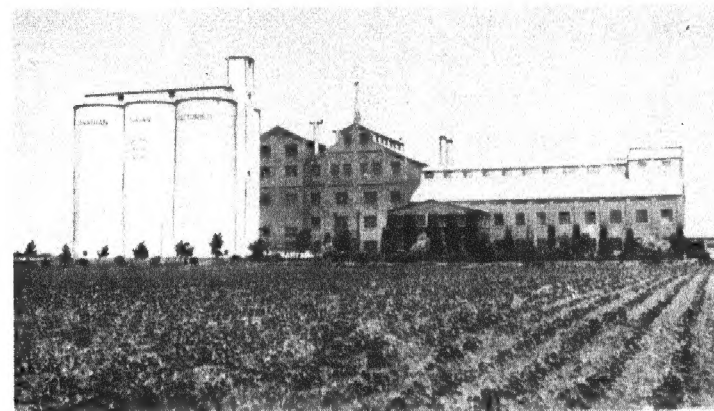
guidance and assistance of irrigation experts. Such assistance could best be assured through the establishment of experimental irrigation farms sponsored by the Government, within each irrigation district.

IRRIGATION DEVELOPMENT IN SOUTHERN ALBERTA will solve many of the post-war problems of rehabilitation and re-establishment for our returning veterans. It will serve as a corner stone on which the economic security of the Province can be built. Such development is inevitable and should not be delayed.

[ 31 ]



*Broder's Modern Canning Plant at Lethbridge*



*Sugar Factory at Picture Butte.*

**IRRIGATION WILL PROVIDE INCREASED PROFITS TO FARMERS**

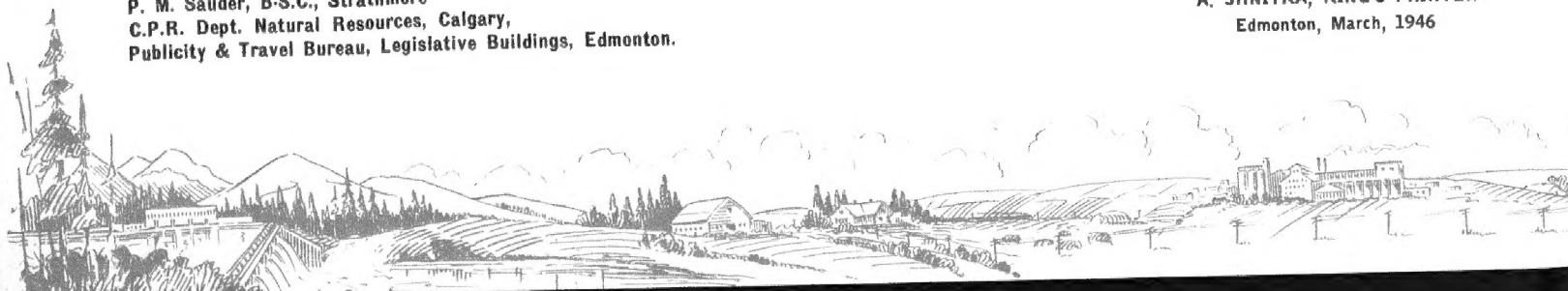


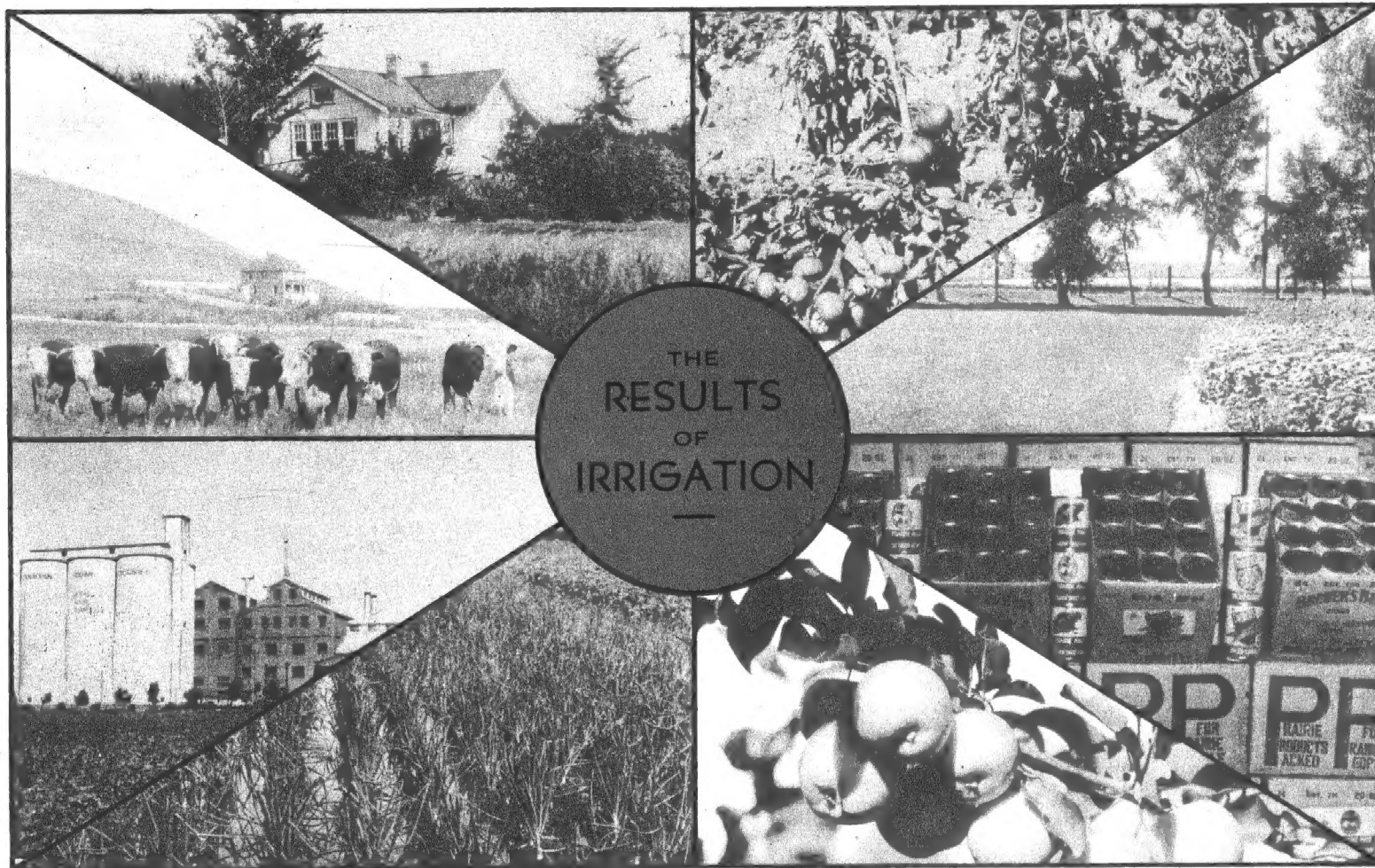
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THE  
RESULTS  
OF  
IRRIGATION



